

MAGNETORESISTANCE SENSOR HAVING AN  
ANTIFERROMAGNETIC PINNING LAYER WITH BOTH SURFACES  
PINNING FERROMAGNETIC BIAS LAYERS

ABSTRACT OF THE DISCLOSURE

- 5           A magnetoresistance sensor structure includes a magnetoresistance sensor  
having a sensor surface plane and having a free layer. An upper antiferromagnetic  
layer overlies at least a portion of the free layer, and an upper ferromagnetic layer  
overlies and contacts at least a portion of the upper antiferromagnetic layer on a  
contact face lying parallel to the sensor surface plane, so that the upper  
10   antiferromagnetic layer lies between the upper ferromagnetic layer and the free  
layer. The magnetoresistance sensor may be a giant magnetoresistance sensor or  
a tunnel magnetoresistance sensor.